COUPP 2l Run Plan for the Period Before Inner Vessel Installation

21 July 2010

This document makes explicit the run plan for the first testing period of the COUPP 2l device in SNOLAB. This period will occur following the underground assembly of the full apparatus minus the inner vessel and minus the outer shielding. It is planned that this period last from late July 2010 until the installation of the inner vessel in late August 2010. The COUPP-SNOLAB-Fermilab Accord[1] should be read prior to this document to provide the necessary understanding of the full system.

The Equipment

By the end of July 2010 the full COUPP 2L experiment minus the inner vessel and minus the outer water shielding should be installed underground at SNOLAB. This equipment and its function are detailed in the COUPP-SNOLAB-Fermilab Accord[1].

The Goals

Re-commission the data acquisition and hydraulic control of the experiment. Implement and test additional alarms and limits following the minor changes made after the Fermilab run. Run stably under remote control for an extended (i.e. multi-day) period of time.

Stepwise Turn On

After mechanical assembly and the granting of permission to energize equipment the following stepwise turn on will be conducted

1. Turn on UPS and setup remote access to it
2. Turn on switched PDU and setup remote access to it
3. Turn on Linux computer and establish network connectivity
4. Turn on DAQ PXI crate and check functionality (check if PXI can communicate with all DAQ elements)
5. Power up hydraulic cart and establish communication to it from the PXI processor
6. Turn on camera/LED control box (CBOX) and establish functionality
7. Tune up illumination and focus of the cameras (shutter speed, fstop, focus, illumination level, gain, and offset)
8. Turn on NESLAB heater/chiller, establish communication to it and test temperature control and adjust high temperature cutout.

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[1] http://coupp-docdb.fnal.gov/cgi-bin/ShowDocument?docid=257

9. Charge the hydraulic cart and pressure vessel with glycol following procedures[2]. Fine tune the cameras with degassing bubbles
10. Charge the accumulator tanks with compressed air
11. Connect the compressed air to the hydraulic cart and energize the compressed air side of the hydraulic cart
12. Confirm that all temperature and pressure transducer readbacks are working
13. Install webcams
14. Check for hydraulic leaks and tighten seal bolts as necessary

The above list of actions should take less than a shift if no problems are encountered.

Tests Conducted with COUPP Personnel Underground

After completion of the stepwise turnon of the previous section everything is ready to go and the following set of tests will be conducted by personnel underground with the equipment.

1. Test the alarms and limits functionality of the DAQ
2. Test the run control capability of the DAQ
3. Test the ability of the heater/chiller to regulate the temperature of the glycol
4. Test the ability to run with a pressure ramp

Running with no COUPP Personnel underground

Once the set of tests described in the previous section is successfully completed, the system will run in a steady state mode where data is being accumulated without COUPP personnel underground. Tests of starting and stopping the DAQ remotely will be conducted. Typical steady state running of the system without an inner vessel has a recompression every 1000 secs. We expect to run in this mode until the arrival of the inner vessel in late August 2010.

[2] http://coupp-docdb.fnal.gov/cgi-bin/ShowDocument?docid=167